

February 21, 2012

Mr. Tim Crockett  
Crockett Engineering  
2608 North Stadium Drive  
Columbia, MO 65202

RE: Trip Generation Assessment  
Proposed Residential Development – Stadium Boulevard and Maguire Boulevard  
Columbia, Missouri  
CBB Job No. 17-12

Dear Mr. Crockett:

As you requested, Crawford, Bunte, Brammeier has prepared a Trip Generation Assessment related to the proposed residential development, known as The Domain, in Columbia, Missouri. The site is located in the southwest quadrant of the intersection of Stadium Boulevard and Maguire Boulevard, just east of Highway 63. It is our understanding that the anticipated land uses for the proposed site have changed since the original Crosscreek Traffic Study and subsequent update that was completed in February 2007 by Trabue, Hansen & Hinshaw, Inc (THH). The City requested a comparison of the previously forecasted trip generation estimates to the currently proposed trip generation estimates.

The sole purpose of this assessment was to determine the number of trips that would be generated by the current development plan and compare those trips to the trips estimated in the Crosscreek February 2007 Traffic Study Update. It should be noted that no additional traffic data collection or analyses were completed for this assessment, and this does not represent a detailed traffic impact study.

The February 2007 Update for the Crosscreek development assumed the following uses for the area south of Stadium Boulevard, east of Highway 63, west of Maguire Boulevard and north of the creek:

- 10,000 square feet of general office space;
- a 90 room business hotel;
- a 90 room hotel;
- a 90 room motel;
- a 5,000 square feet high-turnover sit-down restaurant; and
- a service station/convenience market with 16 fueling stations.

The number of trips estimated for the area south of Stadium Boulevard in the Crosscreek February 2007 Update is shown in **Table 1**.

**Table 1: Crosscreek (South of Stadium) – February 2007 Update**  
**Trip Generation Estimate**

Land Use	Size	AM Peak Hour					PM Peak Hour				
		Total Trips	% Common Trips	Net Trips			Total Trips	% Common Trips	Net Trips		
				In	Out	Total			In	Out	Total
General Office	10,000 ft <sup>2</sup>	30	20%	21	3	24	90	20%	12	60	72
Business Hotel	90 rooms	52	20%	25	17	42	56	20%	27	18	45
Hotel	90 rooms	40	20%	19	13	32	47	20%	19	19	38
Motel	90 rooms	57	20%	17	29	46	54	20%	24	19	43
Sit-Down Restaurant	5,000 ft <sup>2</sup>	58	20%	24	22	46	55	20%	23	21	44
Gas Station	16 pumps	161	20%	65	64	129	214	20%	86	85	171
<b>Total Trips</b>		<b>398</b>		<b>171</b>	<b>148</b>	<b>319</b>	<b>516</b>		<b>191</b>	<b>222</b>	<b>413</b>

The revised development plan includes the following uses for the same development area:

- a 228 unit student housing development with 654 beds; and
- the previously assumed service station/convenience market with 16 fueling stations.

The current development plan maintains the same access as studied before; one right-in/right-out access onto Stadium Boulevard and one full access onto Maguire Boulevard. The existing 10 foot wide median on Stadium Boulevard physically restricts the movements at the access on Stadium Boulevard to right-in/right-out; however, the eastbound left-turn movement at Maguire Boulevard was constructed to accommodate u-turn movements at the traffic signal.

The proposed student housing development is unique, in that, all of the residents would be students at the area universities. As such, their trips would consist primarily of going to and from school. In addition, public transportation would be provided from the housing development to the area schools which would impact the number of trips to and from the development. Given the unique characteristics of the proposed student housing development, traffic count data was collected for The Cottages student housing development located near Nifong Boulevard and Bearfield Road to assist in determining the projected trip generation for the proposed Domain student housing development.

The trip rates provided in the *Trip Generation Manual*, 8<sup>th</sup> Edition, published by the Institute of Transportation Engineers (ITE) were also evaluated to provide a basis of comparison. The following is a summary of the data collected for The Cottages student housing development and the land use

rates from the *Trip Generation Manual* used for determining the trip generation characteristics of the proposed student housing development:

- Student Housing
  - The data collected for The Cottages student housing development consisted of driveway counts during the weekday a.m. and p.m. peak periods. The Cottages student housing development consists of 525 beds. Based on the empirical data the average rates are as follows:
    - AM Peak Hour – 0.30 trips per bed (40% enter / 60% exit)
    - PM Peak Hour – 0.32 trips per bed (50% enter / 50% exit)
  - Land Use Code 220 – *Apartment* was used for comparison

Using the traffic count data collected for The Cottages student housing development and the rates provided in ITE for apartments, the number of trips that would be generated by the proposed Domain student housing development were calculated, as shown in **Table 2**.

**Table 2: The Domain Trip Generation Estimate**

Land Use	Units	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Forecasted Trips Using Local Trip Rate for Como Cottages							
Student Housing	654 beds	78	118	196	105	105	210
Total New Trips (Based on Local Data)		78	118	196	105	105	210
Forecasted Trips Using ITE Rates							
Apartment	228 units	23	92	115	93	50	143
Total New Trips (Based on ITE Data)		23	92	115	93	50	143

As shown in the table, the local trip data collected for The Cottages student housing development resulted in an estimated trip generation approximately 50 to 70 percent higher than the estimates derived from the *ITE Trip Generation Manual* for an apartment.

Based on our engineering judgment, the local trip data collected for The Cottages development is more reliable than the data provided by ITE, thus the local trip data was used to determine the site-generated trips for the proposed Domain student housing development. The proposed student housing development is estimated to generate a total of 196 trips during the a.m. peak hour and 210 trips during the p.m. peak hour.



The number of trips estimated for the area south of Stadium Boulevard based on the revised development plan is shown in **Table 3**. Although the previous studies assumed a common trip rate (internal capture rate) of 20%, the estimates shown in Table 3 assumed a lower common trip rate of only 10%.

**Table 3: Crosscreek (South of Stadium) – Revised 2012 Development Plan  
Trip Generation Estimate**

Land Use	Size	AM Peak Hour					PM Peak Hour				
		Total Trips	% Common Trips	Net Trips			Total Trips	% Common Trips	Net Trips		
				In	Out	Total			In	Out	Total
Student Housing	654 Beds	196	10%	70	106	176	210	10%	94	95	189
Gas Station	16 pumps	161	10%	73	72	145	214	10%	96	97	193
Total Trips		357		143	178	321	516		190	192	382

In comparing Tables 1 and 3, the current development plan is expected to generate approximately the same number of trips as the original development plan.

The revised development plan including the student housing development is estimated to generate a total of 321 *net* trips during the a.m. peak hour as compared to the 319 trips estimated in the February 2007 Crosscreek Update. Similarly, the revised development plan including the student housing development is estimated to generate a total of 382 *net* trips during the p.m. peak hour as compared to the 413 trips estimated in the Crosscreek February 2007 Update.

Although no specific traffic assignments or operational capacity evaluations were performed for the study intersections using the revised trip estimates, it can be reasoned that operating conditions would have similar results as reported in the February 2007 Crosscreek Update since the current site plan is expected to generate nearly the same number of trips. As such, the prior recommendations as part of the Crosscreek February 2007 Update would remain valid.

We trust that this trip generation assessment adequately addresses the trip generation differences associated with the revised development plan. Please contact me should there be any questions regarding this letter.

Sincerely,

Shawn Lerai White, P.E., PTOE  
Senior Traffic Engineer